July 11, 2006

Duxbury - Stowe 115KV Line Project Design Report

Design Report:

Design of the Duxbury – Stowe 115 / 34.5kV line followed the NESC code plus a 2' construction buffer adder. For the most part, this is the basis for the line design and is followed with certain exceptions due to other design considerations that must be meet.

Below is a listing of certain areas where special considerations to the design took place due to landowner concerns and design limitations.

Harvey Property Strs. 1 thru 7: The design thru this section is H-Frame and the heights are dictated primarily by the distribution line the 115kV is crossing over which is between structures 2 & 3. Also, the ground clearances in this section is above the criteria of 22 foot clearance to ground and is a minimum of 30' to allow for training horses because the line is going across a horse track. The 30' allows extra clearance for horse whips.

Structure 9 thru 13: Structure No. 9 is tall to maintain the required clearance over the Highway. This translates to the next few structures going uphill to be tall in order to keep these structures from going into uplift and from having insulator swing violations.

Structure 18: Due to the adjacent structure heights, in order to contain uplift and swing, this structure is at the lowest height above grade possible without having to go to a deadend type which would also affect the strength capacities of the adjacent structures.

Structure 21 thru 24: The ground peak between 19 and 20 controls the height of 20 and the ground peak between 24 and 25 controls the height of 24 and thus in containing the limits of swing and uplift on the structures in-between these structures maintain a clearance to ground greater than 22 feet.

Structure 56: Structure 56 is tall in order to maintain clearance to the side slope ground profile.

Structure 63 & 64: These structures are tall in order to maintain the swing limitations and to keep the tangent structures from going into uplift while allowing the adjacent structures to remain within the strength limits of wood pole design. If structures 63 & 64 were to be lowered, the weight spans of the adjacent structures would increase and exceed the limits of the wood pole design.

Structure 70 thru 72 & 78 thru 81 & 89 thru 92: These structures are as tall as they are for the same reasons stated for structures 63 & 64.

Structure 84 & 85: These structures are as tall as they are due to swing and strength limitations.

Structure 102 thru 104: These spans are determined to address concerns of the landowners and to control swing limitations.

Structure 112 thru 117: These structures are as tall as they are due to swing and strength limitations as well as maintaining the navigable waterway clearance over the river.

Structure 117 thru 118: This span is long to control the swing on structure 118 and to move the structures to the locations preferred by the landowner.

Structure 130 thru 131: This area was spanned in order to stay out of a Fen area.

Structure 132 thru 136: These structures are as tall as they are in order to stay within the swing and strength limitations of the design caused from crossing the 34.5kV to the East side from the West in order to align the lines for their entrance to the Stowe Substation.

Structure 136 thru 137: This span is long due to landowner concerns. Poles are positioned where all the landowners in the association agreed to have them.